



Scale 1:240 (5"=100') Imperial
Measured Depth Log

Well Name: DAMW 'A' #1-11
Location: 2305' FNL, 1675' FEL, Sec 11-T17S-R33W, Scott County, Kansas
License Number: API: 15-171-21128 Region: Scott County
Spud Date: 02/09/2015 Drilling Completed: 02/18/2015
Surface Coordinates: Lat: 38.5919427
Long: -100.9313912
Bottom Hole Vertical hole
Coordinates:
Ground Elevation (ft): 3010' K.B. Elevation (ft): 3021'
Logged Interval (ft): 3600' To: RTD Total Depth (ft): 4817'
Formation: Mississippian at RTD
Type of Drilling Fluid: Chemical

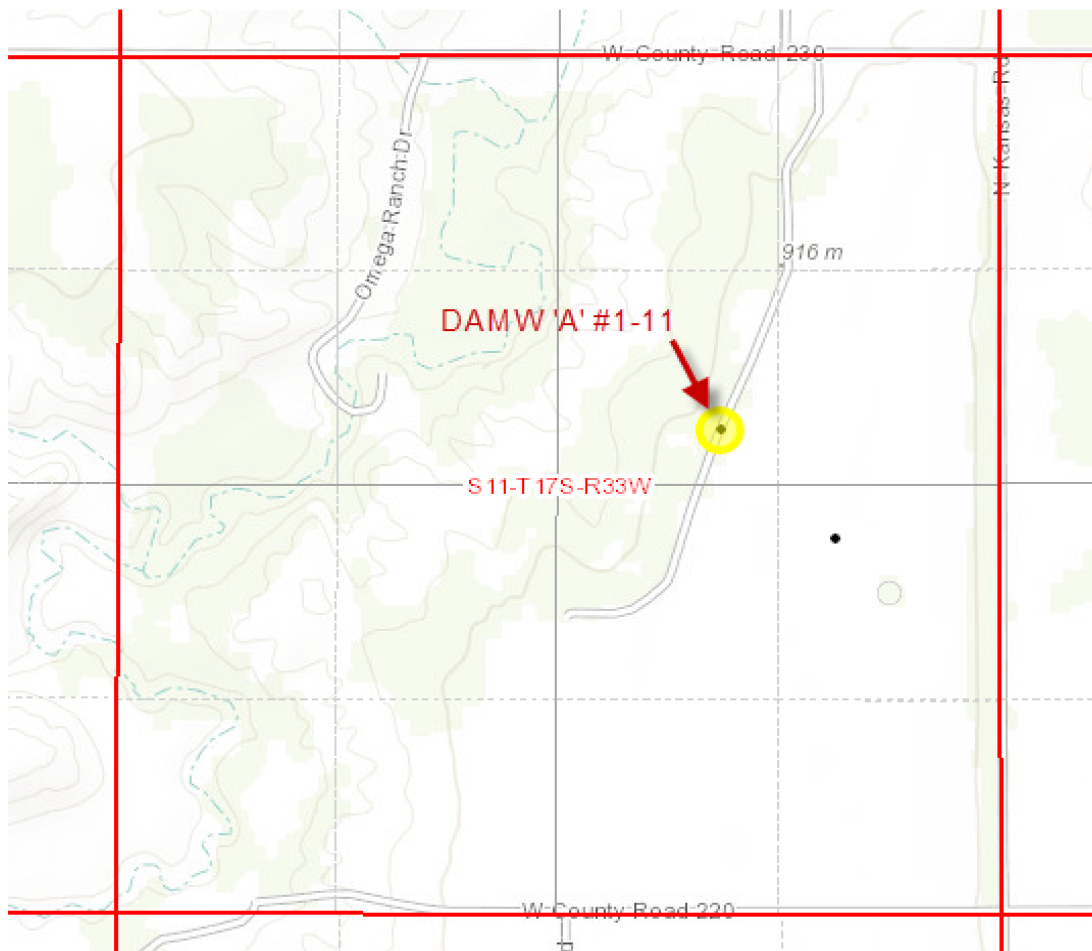
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OPERATOR

Company: Murfin Drilling Company, Inc.
Address: 250 N. Water
Suite 300
Wichita, KS 67202

GEOLOGIST

Name: Kent R. Matson
Company: Matson Geological Services, LLC
Address: 33300 W. 15th Street S.
Garden Plain, Kansas 67050
316-644-1975



COMMENTS

Murfin Company Geologist: Michel Runnion, 316-267-3241.

Contractor: Murfin Drilling Company, Rig #21.

Tool Pusher: Juan Tinoco, 785-443-1421.

Surface Casing: 8 5/8" set at 271' (KB) w/235sx cement.

Production Casing: Based on field observations of drill cuttings, DST results and electric log evaluation, production casing was not installed and the hole was plugged and abandoned.

Mud by: Morgan Mud, Inc., Cade Lines, 308-345-2331.

DST's by: Trilobite Testing, Justin Harris & Chuck Smith, 800-728-5369.

Logs by: Pioneer (DI w/GR, CND, Sonic, and Micro), Y. Ruiz, 785-625-3858.

RTD= 4817'

LTD= 4810'

FORMATION TOPS

| FORMATION | SAMPLE TOPS | | LOG TOPS | |
|---------------|-------------|-------|----------|-------|
| | Depth | Datum | Depth | Datum |
| Topeka | 3709' | -688 | 3702' | -681 |
| Heebner Shale | 3948' | -927 | 3942' | -921 |
| Lansing | 3992' | -971 | 3984' | -963 |
| Stark Shale | 4275' | -1254 | 4268' | -1247 |
| Pawnee | 4502' | -1481 | 4493' | -1472 |
| Fort Scott | 4544' | -1523 | 4537' | -1516 |
| Cherokee | 4572' | -1551 | 4563' | -1542 |
| Johnson | 4614' | -1593 | 4607' | -1586 |
| Morrow | 4678' | -1657 | 4670' | -1649 |
| Mississippian | 4728' | -1707 | 4721' | -1700 |
| RTD | 4817' | -1796 | | |
| LTD | | | 4810' | -1789 |

ROCK TYPES

LITHOLOGY

| | |
|--|----------|
| | Anhy |
| | Cht |
| | Coal |
| | Congl |
| | Dol |
| | Gyp |
| | Lmst |
| | Salt |
| | Shale |
| | Shcol |
| | Shgy |
| | Sltst |
| | Ss |
| | Carb sh |
| | Dol |
| | Dtd |
| | Gry sh |
| | Sandylms |
| | Shale |
| | Sltstn |
| | Shlyslts |

| | |
|--|------------|
| | Sitysh |
| | Sdy dolo |
| | Silty dolo |
| | Shy dolo |
| | Shaly ls |

FOSSIL

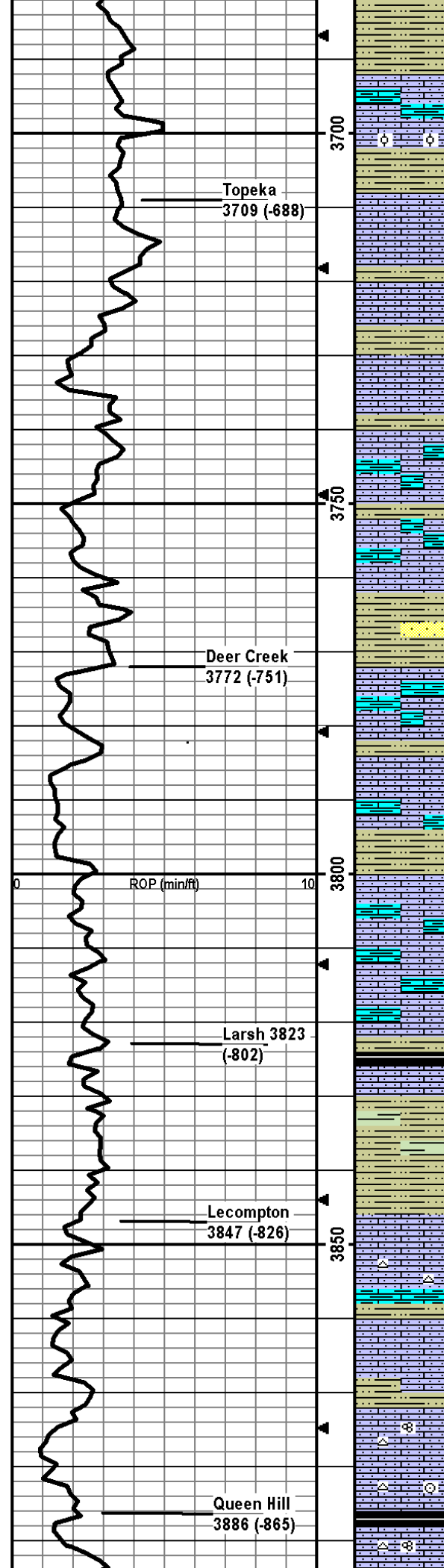
| | |
|--|---------|
| | Algae |
| | Amph |
| | Belm |
| | Bioclst |
| | Brach |
| | Bryozoa |
| | Cephal |
| | Coral |
| | Crin |
| | Echin |
| | Fish |
| | Foram |
| | Fossil |
| | Gastro |
| | Oolite |

MINERAL

| | |
|--|----------|
| | Ostra |
| | Pelec |
| | Pellet |
| | Pisolite |
| | Plant |
| | Strom |
| | Fuss |
| | Oomold |
| | Anhy |
| | Arggrn |
| | Arg |
| | Bent |
| | Bit |
| | Brecfrag |
| | Calc |
| | Carb |
| | Chtdk |
| | Chtlt |
| | Dol |
| | Feldspar |

| | |
|--|----------|
| | Ferrpel |
| | Ferr |
| | Glau |
| | Gyp |
| | Hvymin |
| | Kaol |
| | Marl |
| | Minxl |
| | Nodule |
| | Phos |
| | Pyr |
| | Salt |
| | Sandy |
| | Silt |
| | Sil |
| | Sulphur |
| | Tuff |
| | Chlorite |
| | Dol |
| | Sand |
| | Sly |

| rop ROP (min/ft) | Depth | Lithology | CFS Point | Oil Shows | Geological Descriptions | Remarks |
|---------------------|---|-----------|-----------|-----------|--|--|
| | <p>35</p> <p>3550</p> <p>3600</p> <p>3650</p> | | | | <p>Morning Report Depth/Activity 02/09/2015, Spud. 02/10, drill @ 271'. 02/11, drill @ 2997'. 02/12, drill @ 3778'. 02/13, DST#1 @ 4080'. 02/14, drill @ 4231'. 02/15, drill @ 4345'. 02/16, DST#3 @ 4490'. 02/17, DST#4 @ 4680'. 02/18, DST#5 @ 4730'; TD @ 4817'.</p> <p>Anhydrite: Top @ 2362', Base @ 2380' (based on drill time); Top @ 2287', Base @ 2375' (based on electric log).</p> <p>Formation tops and lithologies have been adjusted to correlate to the electric log.</p> <p>ROP Data begins @ 3600' on 02/11/2015</p> <p>Drill cutting samples at 10' intervals start at 3600'.</p> <p>SH: lt-dk gry/red brn, vry silty, slt carb, soft-firm. Some LS: lt brnsh gry, micro-med xtal, chalky, no vis por, no odor, ns.</p> <p>LS: gry/lt brn, micro-fn xtal, vry silty, no vis por, no odor, ns. Some SH as above.</p> <p>LS: lt-med gryish brn, micro-med xtal, vry silty, some chalky, few foss frags, no vis por, no odor, ns.</p> <p>LS: lt brn/lt-med gry, micro-med xtal, foss frags, silty, chalky, no vis por, no odor, ns.</p> <p>SH: lt-dk gry/dk brn, silty, slt carb, soft-firm, fissile, no odor, ns.</p> <p>LS: wht/crm/lt brn/min gry, micro-fn xtal, foss frags, some silty, arg, abund chalky pcs, some ppt-med in-xtal/frac por, no odor, ns.</p> <p>LS: same as above, no odor, ns.</p> <p>SH: lt-dk gry/brn, silty/sndy, carb, soft-firm, some brn sltstn no odor, ns.</p> <p>SH: lt-dk gry, silty/sndy, carb, soft-firm; sltstn/SS: brn, vf-f, sr-wr, arg, friable, no odor, ns.</p> <p>LS: med gry/lt brn, micro-fn xtal, min foss frags/brac, silty, no vis por, no odor, ns.</p> | <p>Morgan Mud Check #0 @ 0' 02/09/15, predrilling instructions.</p> <p>Morgan Mud Check #2 @ 3294' 02/11/15 11:20am wt vis pH chl 8.6 87 12 3000 Filt LCM 6.0 1</p> <p>Made bit trip at 3592', switched from PDC bit to rotary tri-cone bit.</p> |



SH: lt-med gry, carb, vry silty, firm, friable, no odor, ns.

LS: med gry, micro-fn xtal, vry silty, vry arg, no vis por, no odor, ns. Some SH as above.

LS: crm/tan, micro-med xtal, foss frags/ool, silty, some chalky, some ppt-fn in-xtal por, no odor, ns. Some SH: med-dk gry, silty, carb, firm, fissile.

LS: crm/tan, micro-fn xtal, some foss frags, vry silty, some chalky, no vis por, no odor, ns. Some SH: med gry, silty, carb, firm, fissile.

LS: crm/lt brn/gry, micro-fn xtal, foss frags, vry silty/sndy, some chalky, some ppt-fn in-xtal por, no odor, ns. Some SH: lt-med gry, vry silty, carb, firm, fissile.

LS: lt gry/tan/brn, micro-fn xtal, min foss frags, silty, arg, min ppt-fn in-xtal por, no odor, ns.

LS: lt-med brn/lt gry, micro-fn xtal, foss frags, vry silty, arg, some chalky, min ppt in-xtal por, no odor, ns.

LS: tan/lt-med gryish-brn, micro-med xtal, foss frags, some vry silty, some chalky, arg, min ppt in-xtal por, no odor, ns.

SH: med gry, vry silty, carb, firm-vry firm, fissile, some SS: gry, vf-f, r-wr, hard, friable; some LS: tan/gry, micro-med xtal, foss frags, arg, silty, no vis por, no odor, ns.

LS: tan/lt brn/some gry, micro-fn xtal, foss frags, vry silty, vry arg, some chalky, some ppt-fn in-xtal por, no odor, ns.

LS: tan/lt gry-brn, micro-med xtal, foss frags, vry silty, arg, some chalky, some ppt-fn in-xtal por, no odor, ns. Some SH: med-dk gry, vry silty/sndy, carb, firm, fissile.

LS: as above, no odor, ns; SH: lt-med gry, vry silty, carb, soft-firm.

LS: crm/tan/min gry, micro-fn xtal, vry silty, some arg, some chalky, min ppt-fn in-xtal por, no odor, ns.

LS: tan/lt brn/gry, micro-fn xtal, min foss frags, silty, arg, min frac por, no odor, ns.

SH: dk gry/blk, slt carb, firm, fissile, no odor, ns.

LS: tan/gry, micro-fn xtal, foss frags, silty, arg, min ppt in-xtal por, no odor, ns. Some SH: lt-med gry, silty, soft-firm.

SH: med-dk gry, some vry silty, carb, firm, fissile.

LS: crm/lt-med brn/gry, micro-med xtal, min foss frags, some silty, some chalky, some ppt-fn in-xtal por, 4 pcs w/fn-med in-xtal por w/sfo, dul yel flor, slt crush odor, sfo.

LS: crm/lt brn/lt gry, micro-med xtal, foss frags/fusln, some silty, some chalky, min wht chert, some ppt in-xtal por, no odor, ns. SH: med-dk gry/brn, silty, carb, firm, fissile.

LS: crm/gry/lt brn, micro-med xtal, foss frags, some vry silty, some chalky, min ppt-fn in-xtal por, no odor, ns

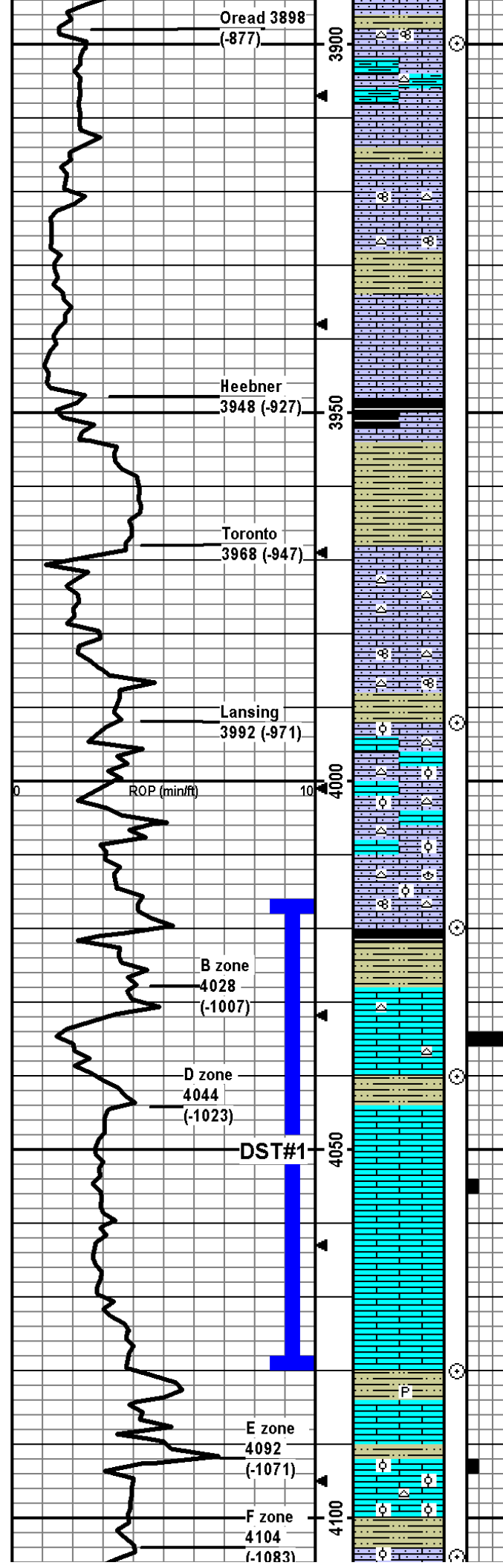
LS: crm/tan, micro-fn xtal, some foss frags/fusln, silty/sndy, min wht chert, 1 pce w/fn-med in-xtal por w/sfo, dul yel flor, no odor, ssfo.

LS: crm/tan, micro-fn w/some med xtal, foss frags/crin, silty/sndy, some chalky, min wht chert, some ppt-fn in-xtal por, no odor, ns.

SH: dk gry/blk, carb, silty, soft-firm, fissile, no odor, ns.

LS: crm/tan/lt brn, micro-fn xtal, min foss frags/fusln, silty, min wht

Morgan Mud Check #3 @
 3900' 02/12/15 11:50am
 wt vis pH chl
 9.2 49 10.5 5000
 Filt LCM
 7.2 4



chert, min ppt in-xtal por, no odor, ns.

LS: crm/lt-med brn/lt gry, micro-med xtal, some foss frags, vry silty, vry arg, vry chalky, min lt gry chert, some ppt in-xtal por, no odor, ns.

LS: lt-med brn w/gry mottling/gry, micro-med xtal, foss frags, silty, some chalky, some ppt-fn in-xtal por, no odor, ns.

SH: med-dk gry, silty, carb, firm, fissile, no odor, ns.

LS: lt-med brn/lt gry, micro-fn xtal, foss frags/fusln, silty, vry chalky, min lt brn chert, min ppt in-xtal por, no odor, ns.

LS: same as above, vry chalky, no odor, ns.

LS: crm/lt brn/lt-med gry, micro-med xtal, foss frags, vry silty/sndy, arg, chalky, some ppt-fn in-xtal por, no odor, ns.

SH: dk gry/blk, slt carb, silty, firm, fissile, no odor, ns.

LS: lt brn/gry, micro-fn xtal, foss frags, vry silty, vry chalky, some ppt in-xtal por, no odor, ns.

SH: med-dk gry/blk/dk brn, carb, vry silty/sndy, soft-firm, fissile, no odor, ns.

SH: crm/lt-med gry, vry silty, vry carb, soft-firm, no odor, ns.

LS: lt-med brn w/some gry, micro-med xtal, foss frags, silty, some chalky, min ppt-fn in-xtal por, no odor, ns.

LS: crm/tan, micro-fn xtal, foss frags/fusln, silty, some chalky, abund wht/crm/lt brn chert, some ppt-fn in-xtal por, no odor, ns.

LS: crm/tan/lt-gry, micro-med xtal, foss frags/fusln, vry silty, some chalky, wht/lt brn chert, some chalky, some ppt-fn in-xtal/frac por, no odor, ns.

LS: crm/lt brn/gry, micro-med xtal, foss frags/ool, some silty/sndy, vry chalky, some crm/lt brn chert, some ppt-fn in-xtal/in-oo por and fn-crs oo-castic por, no odor, ns.

LS: crm/lt brn/gry, micro-med xtal, foss frags/ool, some silty, vry chalky, wht/crm chert, some ppt-fn in-xtal/in-oo por and some med-crs oo-castic por, no odor, ns.

LS: crm/lt brn/lt gry, micro-fn xtal, foss frags/ool/fusln/brac, silty, some chalky, crm/lt brn chert, min ppt-fn in-xtal/in-oo por and min med-crs oo-castic por, no odor, ns.

SH: dk gry/blk, slt carb, slt silty, firm-hard, fissile.

SH: lt-dk gry/brn, some vry silty, slt carb, soft-firm, no odor, ns.

LS: crm/lt brn/lt gry, micro-med xtal, some foss frags, wht-lt brn chert, min ppt-med in-xtal por, 36 pcs in 30 min smpl w/sfo, slt crush odor, dul yel flor, gsfo.

SH: lt-dk gry/dk brn, some vry silty, slt carb, soft-firm, fissile.

LS: crm, micro-fn xtal, foss frags, abund chalky pcs, min ppt in-xtal por, no odor, ns.

LS: crm/lt brn, micro-fn xtal, foss frags, abund chalky pcs, min ppt in-xtal por, 1 pcs w/ppt-fn in-xtal por w/sfo, dul yel flor, no odor, ssfo.

LS: crm/tan/some lt gry, micro-fn xtal, foss frags, abund chalky pcs, some ppt-fn in-xtal por, no odor, ns.

LS: crm/lt gry, micro-fn xtal w/some med 2ndry xtal, min foss frags, abund chalky pcs, min ppt in-xtal/frac por, no odor, ns.

SH: lt-dk gry/dk brn, vry silty, carb, pyritic, soft-firm, fissile.

LS: crm/lt-med brn/some gry mottling, micro-med xtal, foss frags, some chalky, min frac por, no odor, ns.

LS: crm/lt brn/lt gry, micro-fn xtal, foss frags/abund ool, chalky, lt brn chert, mostly dense w/min ppt-fn in-xtal por and med-crs oo-castic por, 1 pce w/fn-med in-xtal/in-ool por w/sfo, yel flor, no odor, ssfo. Min SH: lt brn/lt-dk gry, silty, carb, soft-firm.

LS: lt-med brn/some gry, micro-med xtal, foss frags/fusln/ool, some silty/sndy, some chalky, some frac por, no odor, ns. Some SH: lt-dk gry, silty, carb, soft-firm.

CFS @ 3900'
30"/60"

CFS @ 4092'
30"/60"

CFS @ 4020'
30"/60"

CFS @ 4040'
30"/60"

**DST1) 4016-4080
Lansing B-D
zones
30/60/60/90
1st) BOB in 2 min, no BB.
2nd) BOB in 3 min, no BB.
IFP 111-562#
ISIP 1034#
FFP 580-914#
FSIP 1041#
HP 2010-1948#
Recvd: 1929' MCW.**

CFS @ 4080'
30"/60"

Morgan Mud Check #4 @
4080' 02/13/15 01:00pm
wt vis pH chl
9.2 73 10.5 5000
Filt LCM
6.0 3

CFS @ 4105'

CFS @ 4105
30"60"

CFS @ 4125'
30"60"

CFS @ 4215'
30"60"

CFS @ 4245'
30"60"

Morgan Mud Check #5 @
4302' 02/14/15 01:30pm
wt vis pH chl
9.2 52 10.5 6500
Filt LCM
7.2 4

CFS @ 4280'
30"60"

DST2) 4272-4320
Lansing K-zone
30/60/60/90
1st) Surface blow built
to 4"; no BB.
2nd) Surface blow built
to 3.5"; no BB.
IFP 22-76#
ISIP 1100#
FFP 80-152#
FSIP 1062#
HP 2197-2134#
Recvd: 15' OSM, 277'

LS: crm/tan, micro-med xtal, foss frags, vry chalky, some ppt-fn in-xtal, no odor, ns.

LS: crm/lt-med brn/gry, micro-med xtal, foss frags/some ool, some chalky, min ppt-fn in-xtal/frac por, no odor, ns.

SH: lt-dk gry/dk brn, vry silty, carb, soft-firm, fissile.

LS: crm/min lt gry, micro-fn xtal, min foss frags, some silty/sndy, some chalky, slt pyritic, min frac por, 1 pcs w/ppt-fn in-xtal por w/sfo when crushed, no odor, ssfo.

LS: crm, micro-fn xtal, min foss frags, some chalky, min frac por, no odor, ns.

LS: crm/min lt brn, micro-fn xtal, min foss frags, chalky, wht chert, min ppt in-xtal/frac por, no odor, ns.

LS: crm/lt brn/min lt gry, micro-med xtal, chalky, min foss frags/ool, min ppt in-xtal/frac por, no odor, ns.

LS: crm/lt-med brn/lt gry, micro-med xtal, some foss frags, some chalky, some crm/lt gry chert, min ppt-med in-xtal por, no odor, ns.

SH: dk gry/blk/some dk brn, silty, slt carb, firm, fissile.

LS: crm/lt brn, micro-med xtal, foss frags/ool, grainy, vry chalky, some silty/sndy, some ppt-med in-xtal/frac, no odor, ns.

SH: med-dk gry, slt silty, slt carb, slt pyritic, firm, fissile.

LS: crm/lt-med brn/min lt gry/gry mottling, micro-fn w/some med 2ndry xtal, min foss frags/fusln, some chalky, some silty/sndy, min ppt in-xtal por, no odor, ns. Some SH: lt-dk gry/lt green-gry, silty, firm.

LS: crm/lt-med brn/lt gry, micro-med xtal, foss frags/some ool, silty/sndy, some chalky, some ppt-fn in-xtal por, no odor, ns.

LS: wht/lt-med brn/gry, micro-med xtal, foss frags/brac, some silty/sndy, min ppt-fn in-xtal/frac por, no odor, ns.

SH: med-dk gry/blk, silty, slt carb, firm, fissile.

LS: crm/lt-med brn, micro-med xtal, foss frags, some silty/sndy, some frac por, no odor, ns.

SH: lt-med gry, vry silty, carb, soft-firm, some Sltstn: lt gry, pred qtz, arg, friable, no odor, ns.

LS: crm/lt brn/min gry, micro-med xtal, foss frags/ool, silty/sndy, some frac por, no odor, ns.

LS: crm/lt-med brn/min gry, micro-med xtal w/2ndry xtal, foss frags/min ool, some silty/sndy, some chalky, some frac por, no odor, ns.

SH: lt-med gry, silty-vry silty, some carb, soft-firm, some friable, fissile, no odor, ns.

LS: wht/crm/lt-med brn/lt gry, micro-med xtal, foss frags/abund ool pcs, some silty/sndy, some chalky, some pyritic, min wht chert, med-crs oo-castic/fn-med in-xtal por, no odor, ns.

LS: crm/lt-med brn, micro-med xtal, foss frags, silty/sndy, some chalky, min frac por, no odor, ns.

LS: crm/lt-med brn/lt-med gry, micro-med xtal, foss frags/brac/dense ool, some silty, some frac por, no odor, ns.

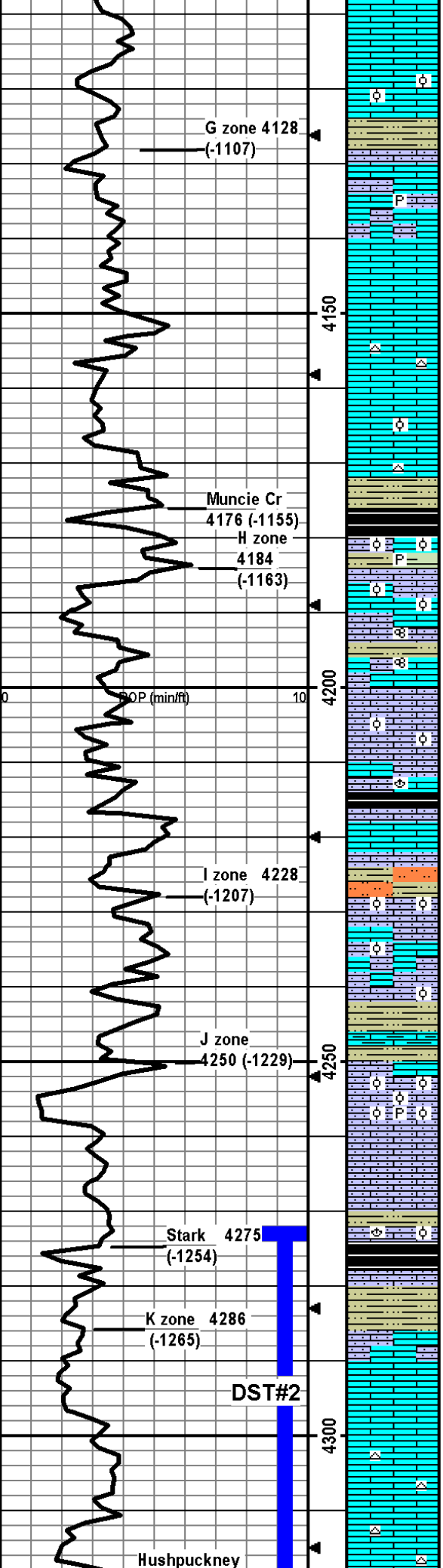
SH: blk/min dk brn, slt carb, firm, fissile.

LS: crm/lt-med brn/gry, micro-med xtal, some foss frags, some silty/sndy, min chalky, 34 pcs w/ppt-med in-xtal por w/sfo, yel flor, gd odor, gsfo.

LS: crm/lt brn/lt gry, micro-med xtal, some foss frags, some chalky, 3 pce w/ppt-med in-xtal por w/sfo, yel flor, slt crush odor, ssfo.

LS: crm/lt brn/lt gry, micro-med xtal, foss frags, some chalky, wht/lt gry chert, 2 pcs w/ppt-fn in-xtal por w/sfo, yel flor, no odor, ssfo.

LS: crm/lt-med brn/gry/gry mottling, micro-med xtal, foss frags, some chalky, wht/crm/lt brn chert, some pyritic, some ppt-fn in-xtal por, no odor, ns.



4318 (-1297)

L zone 4330 (-1309)

B/KC 4358 (-1337)

Exline 4364 (-1343)

Pleasanton SH 4374 (-1353)

Lenapah 4392 (-1371)

ROP (min/ft)

Marmaton 4411 (-1390)

Marm B 4438 (-1417)

DST#3

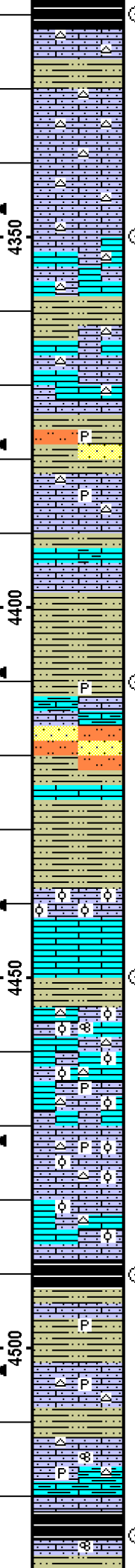
Marm C 4454 (-1433)

Labette SH 458 (-1567)

Pawnee 4502 (-1481)

Lt Osage 4522 (-1501)

Lr Pawnee



SH: dk gry/blk, silty, slt carb, slt pyritic, soft-firm, fissile.
 LS: crm/lt-med brn, micro-fn xtal, some foss frags, silty, chalky, abund wht/lt gry chert, no vis por, no odor, ns.

LS: crm/lt gry, micro-fn xtal, min foss frags, silty, abund chalky pcs, wht/lt gry chert, no vis por, no odor, ns.

LS: crm/lt brn, micro-med xtal, foss frags, silty, some chalky, wht/lt gry chert, some ppt-fn in-xtal por, no odor, 1 pcs w/sfo poss from K-zn above.

LS: crm/lt brn/gry, micro-med xtal, foss frags, some silty, some chalky, gry chert, min frac por, no odor, ns.

SH: med-dk gry, silty, slt carb, firm, fissile.

LS: crm/lt-med brn, micro-med xtal, foss frags, silty/sndy, chalky, wht/lt gry/lt brn chert, some frac por, no odor, ns.

SH: lt-med gry, vry silty/sndy, carb, soft-hard; Sltstn/SS: lt-med gry, vf-f, pred qtz, carb, hard, friable, no odor, ns.

LS: crm/lt-dk brn, micro-med xtal, foss frags, silty/sndy, wht/lt gry chert, min pyritic, no vis por, no odor, ns.

LS: crm/lt brn, micro-med, foss frags, some silty/sndy, some chalky, some arg, min ppt-fn in-xtal por, no odor, ns.

SH: med-dk gry/dk brn/med green-gry, silty, slt carb, firm, fissile.

SH: as above, 1 pce of LS w/fn-med por w/sfo.

SH: med-dk gry/dk brn, vry silty/sndy, carb, slt pyritic, firm, fissile; Sltstn/SS: lt-med gry, vf-f, pred qtz, carb, hard, friable, no odor, ns. Some LS: med-dk brn, arg, silty, no vis por, ns.

LS: crm/lt brn, micro-fn xtal, foss frags, silty/sndy, some chalky, no vis por, no odor, ns. SH: med-dk gry/brn, silty, carb, firm; some Sltstn: lt gry, pred qtz.

SH: med-dk gry/dk brn, silty, carb, firm, fissile.

LS: crm/lt-med brn, micro-med xtal, foss frags/abund ool, some silty, 23 pcs w/ppt-med in-xtal/in-oo por w/sfo, dul yel flor, slt odor, sfo.

LS: crm/lt brn, micro-fn xtal, some foss frags/abund ool, vry chalky, some frac por, slt odor, 10 ool pcs w/ppt-med in-oo por w/sfo, gsfo.

SH: lt-dk gry/blk, some silty, slt carb, firm, fissile.

LS: crm/lt-med brn, micro-med xtal, foss frags/fusln/ool, some silty/sndy, chalky, lt gry/lt brn chert, 2 pcs w/ppt-fn in-xtal/in-oo por w/sfo, ns odor, dul yel flor, ssfo.

LS: crm/lt brn, micro-med xtal, foss frags/ool, some silty/sndy, vry chalky, min pyritic, wht/lt gry/lt brn chert, 2 pcs w/ppt-med in-xtal/in-oo por w/sfo/staining, no odor, dul yel flor, ssfo.

LS: crm/lt brn/gry mottling, micro-med xtal, foss frags/fusln/ool, silty/sndy, chalky, min pyritic, lt gry/lt brn chert, 4 ool pcs w/staining w/ppt-fn in-xtal/in-oo por w/sfo when crushed, no no odor, ns.

LS: crm/lt brn, micro-med xtal, foss frags/dense ool, chalky, some silty/sndy, wht/lt gry/lt brn chert, min ppt-fn in-xtal/frac por, no odor, ns.

SH: med-dk gry/blk/dk brn/green-gry, some vry silty, carb, firm, fissile.

SH: med-dk gry/green-gry/dk brn, some vry silty, some pyritic, carb, soft-firm, fissile.

LS: crm/lt-med brn/lt gry, micro-fn xtal, foss frags, vry silty, some chalky, wht/lt gry-brn chert, slt pyritic, some frac por, no odor, ns.

LS: crm/lt-dk brn/gry, micro-med xtal, foss frags/fusln, silty/sndy, some arg, min pyritic, wht/lt gry chert, min ppt-fn in-xtal/frac por, no odor, ns.

SH: med-dk gry/blk/green-gry/dk brn, slt carb, silty, firm-vry firm, fissile.

LS: crm/lt-med brn/lt gry, micro-med xtal w/some 2ndry xtal, foss frags/fusln, some silty/sndy, some chalky, wht/lt gry, chert, some frac por, no odor, ns.

CFS @ 4320' 30"60"

CFS @ 4350' 30"60"

CFS @ 4410' 30"60"

Morgan Mud Check #6 @ 4415' 02/15/15 02:00pm
 wt vis pH chl
 9.3 50 10.0 7600
 Filt LCM
 8.4 4

CFS @ 4450' 30"60"

DST3) 4394-4490

Marmaton 30/60/60/90

1st) BOB in 7 min; no BB.

2nd) BOB in 8 min; no BB.

IFP 131-325#

ISIP 1188#

FFP 325-610#

FSIP 1159#

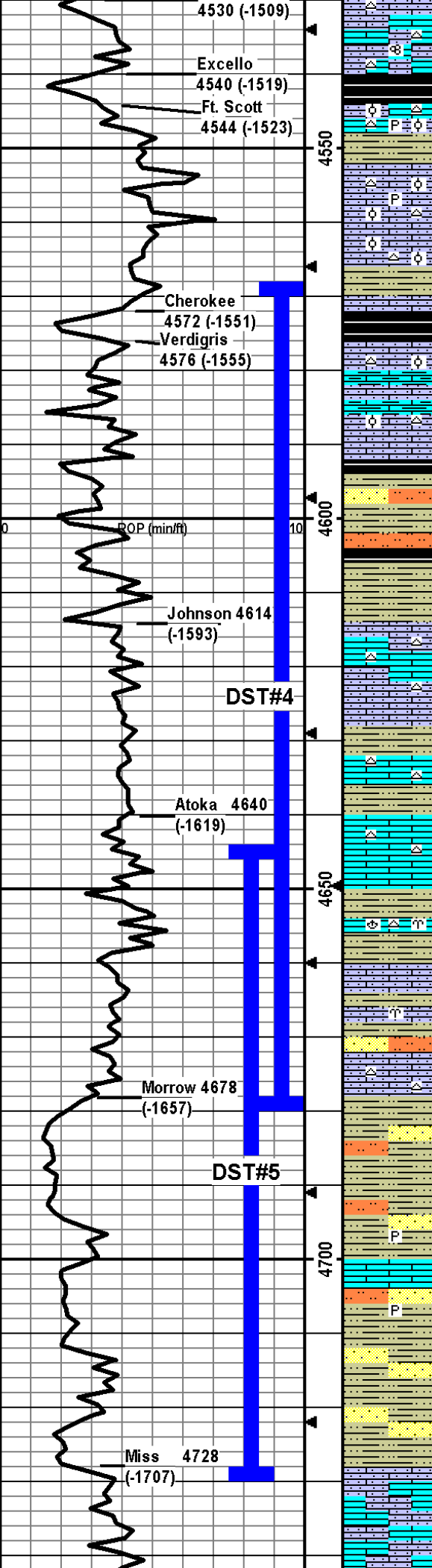
HP 2327-2270#

Recvd: 280' OWCM (2%O), 370' GMCW (5%G), 680' OSMW.

CFS @ 4490' 30"60"

Morgan Mud Check #7 @ 4525' 02/16/15 01:55pm
 wt vis pH chl
 9.4 53 9.5 9600
 Filt LCM
 9.2 3

CFS @ 4525' 30"60"



LS: crm/lt-dk brn, micro-med xtal, foss frags, some silty/sndy, some chalky, crm/lt gry chert, some frac por, no odor, ns.

SH: dk gry/blk, slt carb, firm-hard, fissile.

LS: crm/lt-dk brn/gry, micro-med xtal, foss frags/ool, some chalky, some silty, slt pyritic, abund wht/lt gry/lt brn ool chert, some frac por, no odor, ns. Some SH: lt-med gry/gry-green, silty, firm, carb.

LS: crm/lt-med brn/lt gry, micro-fn xtal, foss frags/some ool, some chalky, silty/sndy, wht/lt gry/lt brn ool chert, slt pyritic, some frac por, no odor, ns.

LS: crm/lt-med brn/gry, micro-fn xtal, foss frags/few ool pcs, vry silty/sndy, arg, some chalky, some wht/lt gry/lt brn ool chert, 1 pce w/ppt in-xtal por w/brn staining fo when crushed, no odor, ssfo.

SH: lt-med gry/lt brn, vry silty, carb, soft-firm, fissile some friable.

SH: lt-dk gry/blk, some silty, slt carb, fissile.

LS: crm/lt-dk brn, foss frags/dense ool, vry silty/sndy, arg, vry chalky, some lt brn chert, some frac por, no odor, ns.

LS: crm/lt gry-brn, micro-med xtal, foss frags/min oo, silty/sndy, min brn chert. 5 pcs w/ppt-med in-xtal por w/sfo, dul yel flor, no odor, sfo.

SH: dk gry/blk/dk brn, silty, slt carb, firm; Sltstn/SS: wht/lt-med brn, pred qtz, vf-f, sr-wr, carb, soft-hard, friable, no odor, ns.

SH: lt-dk gry/blk/lt-med brn, vry silty, carb, some glauc, soft-firm, some vry silty is friable; LS: crm/lt-dk brn, micro-med xtal, vry silty/sndy, foss frags, frac por, no odor, ns.

LS: crm/lt-med brn/lt gry, micro-fn xtal, mn foss frags, some silty/sndy, some brn chert, 6 pcs w/ppt-fn in-xtal por w/sfo, dul yel flor, slt crush odor, sfo.

LS: as above, no odor, ns.

SH: med-dk gry/brn, some vry silty, carb, firm, silty is friable.

LS: crm/lt-med brn, micro-fn xtal, foss frags, some chalky, brn chert, 8 pcs w/ppt-fn in-xtal/frac por w/sfo or staining, dul yel flor, slt odor, sfo.

SH: lt-dk gry/lt green-gry/brn, some vry silty, carb; LS: as above w/12 pcs w/sfo.

LS: crm/lt-med brn, micro-med, foss frags, brn chert, some chalky, 8 pcs w/ppt in-xtal/frac por w/staining and fo on crush, dul yel flor, slt odor, sfo.

SH: lt-dk gry/lt-med brn, carb, vry silty, firm, fissile.

LS: crm/lt brn/lt gry, micro-fn xtal, foss frags/brac/bryz, some chalky, crm/lt brn chert, 14 pcs w/ppt-med in-xtal por w/sfo, yel flor, gd odor, gsfo. SH: med-dk gry/brn, silty, slt carb, firm, fissile.

LS: crm/lt brn/lt gry, micro-fn xtal, min foss frags/bryzn, vry silty/sndy, vry chalky, vry arg, no vis por, no odor, ns; SH: lt gry/lt brn, vry silty/sndy, carb, firm, some friable.

SH: lt-dk gry/green-gry/brn, silty, carb, firm; Sltstn/SS: lt gry/lt brn, pred qtz, vf, arg, carb, firm-hard, friable, no odor, ns.

LS: crm/lt-med brn/lt gry, micro-fn xtal, min foss frags, some vry silty, some chalky, lt-dk brn chert, 2 w/ppt-fn in-xtal/frac por w/sfo, dul yel flor, no odor, sfo..

SH: med-dk gry/blk/dk brn/green-gry/mustard yel, some vry silty/sndy, carb, some glauc, soft-hard; min Sltstn/SS: lt gry/dk green, vf-f, sr-wr, hard-vry hard, friable-nonfria, no odor, ns.

SH w/min Sltstn/SS as above, some pyritic, no odor, ns.

SH/Sltstn/SS as above w/some increase in Sltstn/SS, no odor, ns. Min LS w/ 3 pcs w/sfo, crm-lt brn, micro-fn xtal, ppt-fn in-xtal por, dul yel flor, ssfo.

SH as above; SS: lt-med gry/green, vf-f, sr-wr, slt carb, some glauc, hard, friable, no odor, ns. Min LS w/2 pcs as above w/sfo, no odor, ssfo.

SH/SS w/min LS as above, no odor, ns.

LS: crm/lt brn, micro-med xtal, min foss frags, some vry sndy, some vry chalky, some frac por, no odor, ns.

CFS @ 4540'
30"60"

CFS @ 4570'
30"60"

DST4) 4569-4680
Verdigris,
Johnson &
Atoka
30/60/30/60
1st) 1/2" blow decreased; no BB.
2nd) No blow; no BB.
IFP 24-74#
ISIP 179#
FFP 27-28#
FSIP 93#
HP 2333-2304#
Recvd: 5' OSM.

CFS @ 4635'
30"60"

Morgan Mud Check #8 @
4680' 02/17/15 02:20pm
wt vis pH chl
9.3 100 10 7000
Filt LCM
8.0 3

CFS @ 4680'
30"60"

DST5) 4644-4730
Morrow & Upper
Miss
30/60/30/60
1st) decreasing blow; no BB.
2nd) No blow; no BB.
IFP 24-75#
ISIP 149#
FFP 27-60#
FSIP 90#
HP 2366-2314#
Recvd: 5' OSM.

CFS @ 4730'
30"60"

LS: crm/lt brn, micro-med xtal, min foss frags, some vry silty, some vry chalky, min pyritic, some frac por, no odor, ns.

LS: as above w/min SS: wht, vf-f, r-wr, carb cement, no odor, ns.

LS: crm/lt brn/lt gry-brn, micro-med xtal, some dense ool pcs, some vry silty, some chalky, min pyritic, some frac por, no odor, ns.

LS: crm/lt brn, micro-med xtal, min foss frags/ool, some vry silty, some vry chalky, slt pyritic, some frac por, no odor, ns.

LS: crm/lt brn, micro-med xtal, some ool pcs, vry silty, some vry chalky, no vis por, no odor, ns.

LS: tan, micro xtal, some chalky, min frac por, no odor, ns.

LS: wht/crm/tan, micro-fn xtal, min ool, some vry silty/silty, some vry chalky, min frac por, no odor, ns.

LS: wht/crm/tan, micro-fn xtal, some vry silty/silty, some vry chalky, min frac por, no odor, ns.

Morgan Mud Check #9 @
4775' 02/18/15 01:35pm
wt vis pH chl
9.2 59 10.5 6100
Filt LCM
8.0 4

CFS @4817'
30"/60"
Cir 1 hr to collect samples
and clean hole, conducted 5
stand short trip, circulated 1
hr and TOH for logging.

RTD 4817', -1796
LTD 4810', -1789

